Tributary Strategy Overview for Fairfax County

In January 2005, the Virginia Secretary of Natural Resources released the Commonwealth's Chesapeake Bay Nutrient and Sediment Reduction Tributary Strategy (Tributary Strategy), identified by the Secretary as a first step in meeting the necessary reductions of targeted nutrients and sediment called for in the Chesapeake Bay Agreement of 2000. While the Tributary Strategy document does not offer a breakdown of potential impacts by locality, the pollution reduction goals for the Potomac River basin have several potential impacts on the future water quality programming that may be needed in Fairfax County through 2010.

The Tributary Strategy offers refined nutrient and sediment reductions goals that have been established to meet the Chesapeake Bay Program's developed criteria that take into account the varying needs of different plants and animals and the differing conditions found throughout the Bay. These "living indicator" criteria include:

- **Water clarity** – which ensures that enough sunlight reaches underwater bay grasses that grow on the bottom in most shallow areas;
- **Dissolved oxygen** – which ensures that enough oxygen is available at the right time during the right part of the year to support aquatic life, including fish larvae and adult species; and
- **Chlorophyll a** – the pigment contained in algae and other plants that enables photosynthesis. Optimal levels reduce harmful algae blooms and promote algae beneficial to the Bay's food chain.

The Tributary Strategy outlines the nutrient and sediment reductions in each of Virginia's major Chesapeake Bay river basins. Fairfax County falls entirely within the Potomac River basin. The constituents targeted for reduction in Virginia's portion of the Chesapeake Bay include nitrogen, phosphorus, and sediment. The 2010 Tributary Strategy nutrient and sediment reduction goals and cap load allocations for the Potomac basin represent a 43.8% reduction in total nitrogen, a 28.2% reduction in total phosphorus, and a 14.4% reduction in sediment, respectively, from reduction progress measured in 2002.

Implementation strategies for the Tributary Strategy focus on both point source nutrient reductions as well as nutrient and sediment reductions through non-point source best management practices (BMPs). The point source strategy focuses on waste load allocations related primarily to industrial and wastewater treatment facility improvements that do no affect the County's stormwater management program. The Tributary Strategy outlines a variety of agricultural and urban non-point source implementation strategies that may directly affect the County's stormwater management programming and initiatives between now and 2010. The most relevant initiatives and recommendations that the Virginia Department of Conservation and Recreation (DCR), designated as the state's lead non-point source control agency in the Commonwealth, have committed to in the Tributary Strategy are outlines below. These commitments will directly impact local stormwater management programming for all communities currently covered under a VPDES MS4 permit and currently implementing the requirements of the Chesapeake Bay Preservation Act:

Non-Point Source Implementation Strategy #3 - The Consolidation and Strengthening of the Virginia Stormwater Management Program

Year 2005-2007 Stormwater Initiatives

- Insure 100 percent coverage by an individual permit for all MS4 Phase I localities.
- Develop guidelines on what is an acceptable stormwater management program so localities with MS4s, localities located in the CBPA and localities electing to adopt stormwater management programs may utilize the guidelines in developing their programs for delegation by July 1, 2006.
- Revise the existing Stormwater and ESC handbooks to integrate the program areas and incorporate new local government tools such as stormwater and LID planning and design principles.

Year 2008-2010 Stormwater Initiatives

- ***MS4 programs, both Phase I and Phase II, will be examined to determine, what if any, improvements will be needed to increase the emphasis on meeting specific watershed goals.***
- Establish a training and certification classification type for local stormwater program management that equips local government staff to adequately implement MS4 and construction site permitting programs.

Non-Point Source Implementation Strategy #4 - Enhancing Implementation of the Virginia Erosion and Sediment Control Program

Year 2005-2007 Erosion and Sediment Control Enhancements

- Continue existing and develop new grant and cost-share programs and other incentives to promote LID and implement BMP retrofits through demonstration projects, local development roundtables and other methods.
- Revise the existing ESC and Stormwater handbooks to integrate the program areas and incorporate new local government tools such as stormwater and LID planning and design principles.

Year 2008-2010 Erosion and Sediment Control Enhancements

- Fund and implement BMP cost-share or other incentive program approaches to accelerate LID and BMP retrofit installation.

Non-Point Source Implementation Strategy #5 - Strengthen Implementation of the Chesapeake Bay Preservation Act

Year 2005-2007 Program Initiatives

- Seek increased funding for local program implementation.
- Support demonstration projects, such as stormwater management retrofits on redevelopment sites or replacement of failing septics with denitrification systems within Bay Act jurisdictions.

The highlighted statement in Strategy #3 outlines the framework for inclusion of local load cap allocations into municipal MS4 permits if load reductions have not been accomplished via other means prior to 2008. It should be noted that Fairfax County's current Phase I MS4 permit will expire, and subsequently be renegotiated, in 2007. Other initiatives, such as additional LID practices to reduce the impact of stormwater on local receiving channels line up with the County's current efforts to establish local LID guidelines and design standards. Other initiatives include efforts to seek increased funding for local program implementation at the state level, though no clear avenue to a funding source has been identified.

The overall estimated cost for Tributary Strategy implementation throughout Virginia is roughly $9.9 billion. For the Potomac Basin, the cost estimates for implementation are outlined below by BMP category. Of note for Fairfax County, roughly $2.1 billion of the $2.7 billion dollar estimated cost of implementation in the Potomac Basin is generated through the implementation of Urban BMPs. While these cost estimate breakdowns are not provided by community, much of Fairfax County falls into the urban land use classifications outlined in the Tributary Strategy ("pervious urban" and "impervious urban"). In addition, the vast majority of the Urban BMP implementation costs are recognized in the Tributary Strategy as capital costs, denoting the need for significant capital investment in BMP implementation in areas with urban land use classifications in order to meet the basin's nutrient and sediment load cap allocation targets.

Potomac Basin Estimated Cost Summary (in Millions of Dollars)

	Capital Costs	**Tech Assistance**	**O & M**	**Total Cost**
Total Cost for Agriculture BMPs	$116	$12	$6	$133
Total Cost for Urban BMPs	$1,662	$316	$141	$2,118
Total Cost for Mixed Open BMPs	$26	$5	$0.5	$32
Total Cost for Forest BMPs	$0.1	$0.01	$0	$0.1
Total Cost for Septic BMPs	$26	$3	$0	$29
Total Costs for Point Source Reductions	$362	$0	$18	$380
Potomac Basin Grand Total				$2,692
Virginia Statewide Grand Total				$9,997

Source: Table C-2, page 71

Additional Issues:

It should be noted that the estimated cost summary represents the cost to achieve the "Cap". An equally important challenge that is not really addressed here is how to maintain the Cap in perpetuity. While the Chesapeake Bay Preservation Ordinance is a good start, it does not always result in "no-net-increase" since it is based on average watershed conditions. As a result, there will be a slow increase over time which will need to be offset by reductions during redevelopment or additional retrofits in existing areas.

The cost summary represents a "first wave" of a longer term commitment. O&M costs cover the life-time of the facility in questions (which can range from just a few years to over 50 years). However, just like any infrastructure, eventually the infrastructure will need to be replaced, and a new capital investment for replacement will be required. This condition presents a sound justification for a dedicated long-term funding program.

While the Tributary Strategy does not include costs for Fairfax County, it is relatively simple to determine the percentage of the total cost. According to 2002 Chesapeake Bay Program modeling data, there is a total of 446,917 acres of pervious urban and impervious urban land. Fairfax County represents 126,056 acres, or approximately 42% of the total in the Potomac Basin. Therefore, for planning purposes, costs for Fairfax County are approximately $708 million in capital costs, and $903 million in total costs. It is noted that not all of these costs will be borne on the County government, but are spread among developers, the State, and County.